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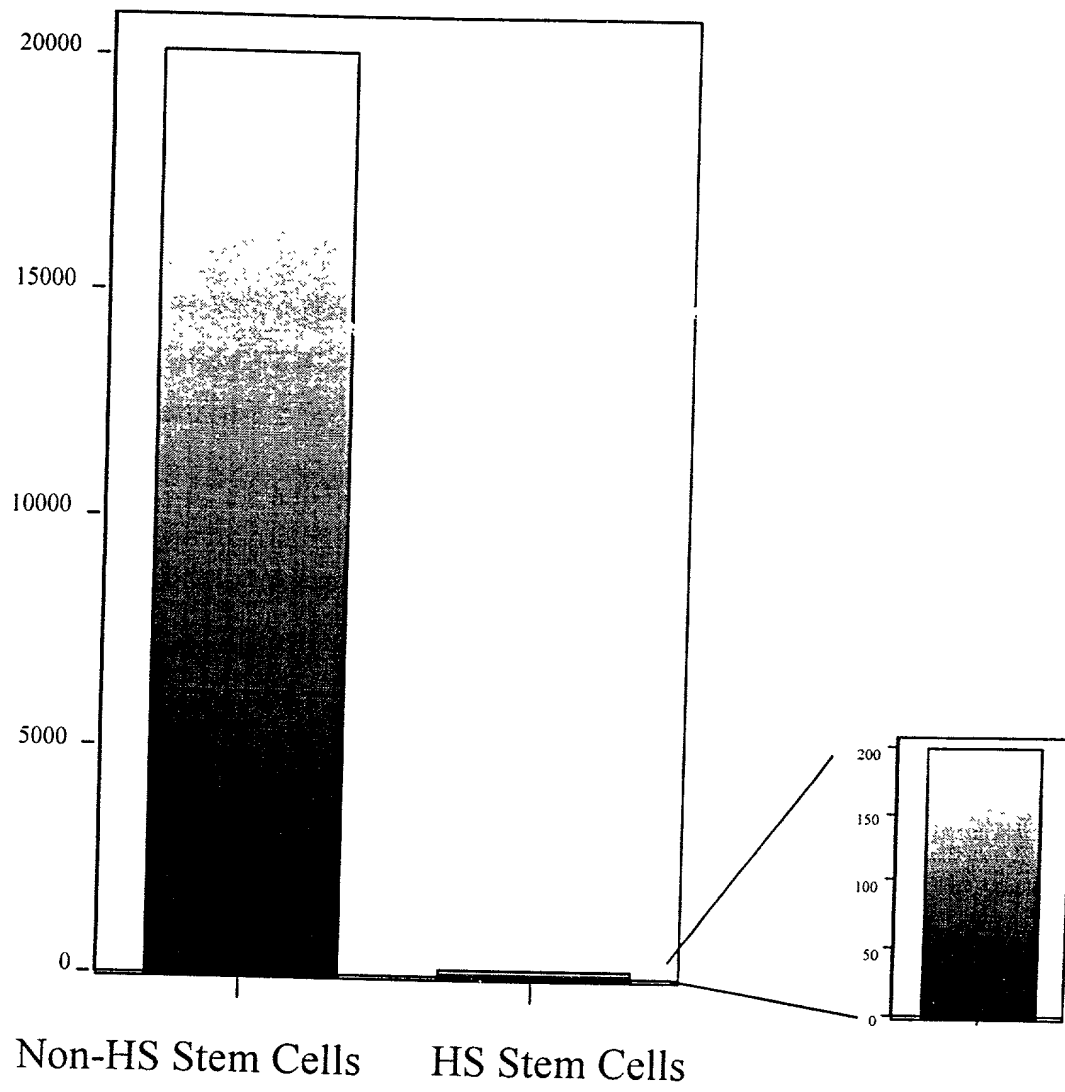
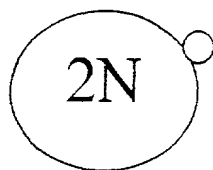


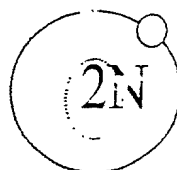
Figure 1

Post-meiosis I homozygous
2N diploid oocyte



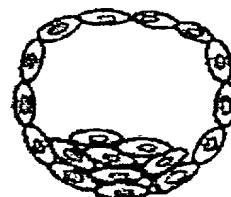
Activation + prevention of
2nd polar body extrusion

One diploid pronucleus



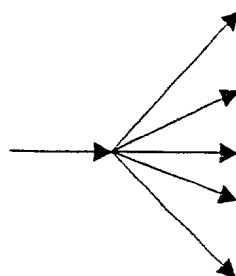
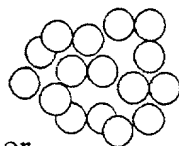
Culture

Blastocyst-like mass



Isolate inner
cell mass

Pluripotent stem cell line



Differentiated Tissues

Figure 2

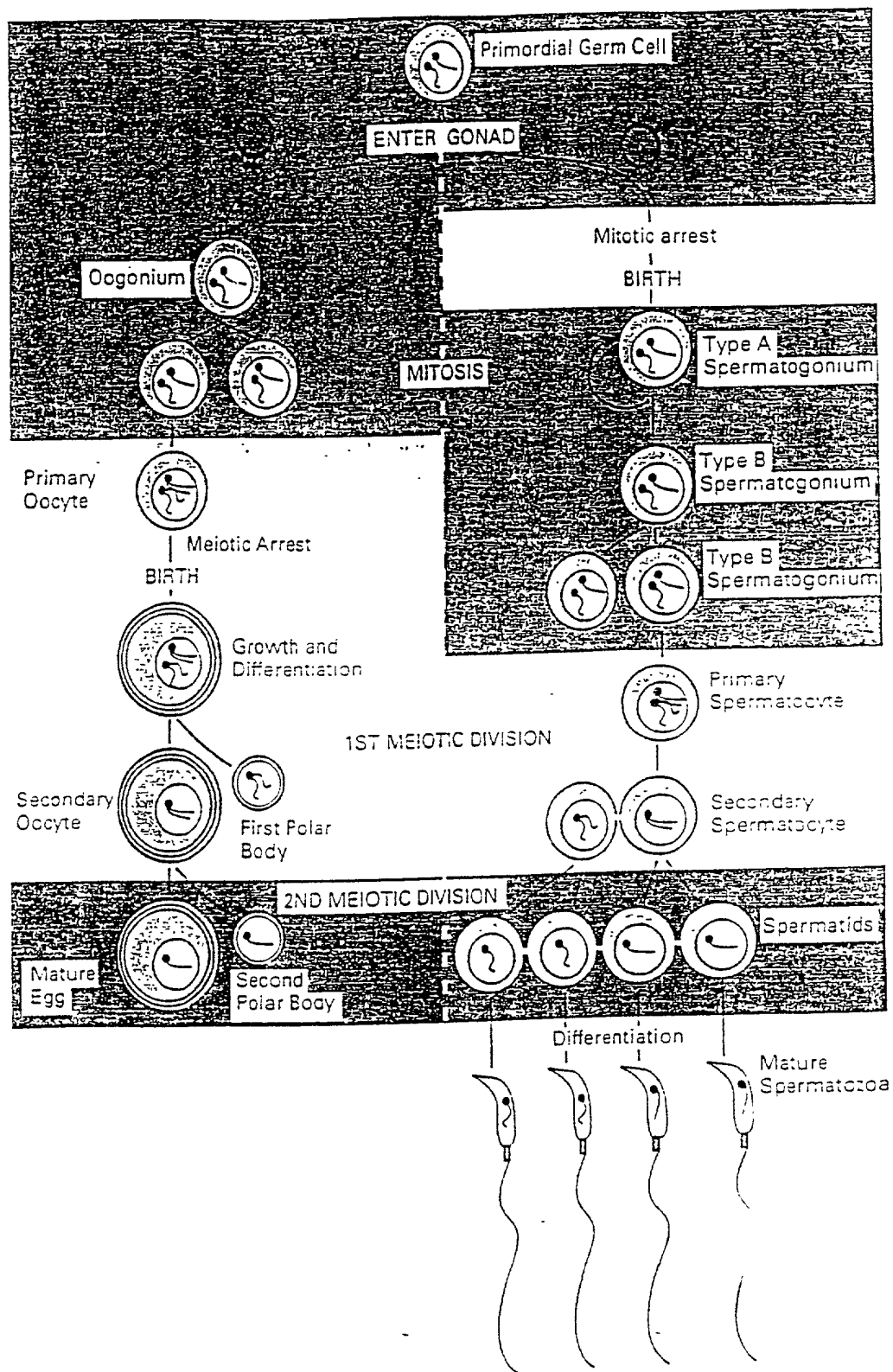


Figure 3

Serological Specificities of the HLA-A, -B, and -C Loci

A locus	B locus	C locus
A1 ^a	B5	B50(21) ^a
A2 ^a	B7 ^a	B51(5) ^a
A233	B703	B5102
A210	B8 ^a	B5103
A3 ^a	B12	B52(5) ^a
A9	B13 ^a	B53 ^a
A10	B14 ^a	B54(22)
A11 ^a	B15	B55(22) ^a
A19	B16	B56(22) ^a
A23(9) ^a	B17	B57(17) ^a
A24(9) ^a	B18 ^a	B58(17) ^a
A2403	B21	B59
A25(10) ^a	B22	B60(40) ^a
A26(10) ^a	B27 ^a	B61(40) ^a
A28	B35 ^a	B62(15) ^a
A29(19) ^a	B37 ^a	B63(15) ^a
A30(19) ^a	B38(16) ^a	B64(14) ^a
A31(19) ^a	B39(16) ^a	B65(14) ^a
A32(19) ^a	B3901(16)	B67
A33(19) ^a	B3902(16)	B70 ^a
A34(10) ^a	B40	B71(70) ^a
A36	B4005	B72(70) ^a
A43	B41 ^a	B73
A66	B42 ^a	B75(15)
A68(28) ^a	B44(12) ^a	B76(15)
A69(28) ^a	B45(12) ^a	B77(15)
A74(19)	B46	B7801
	B47 ^a	Bw4 ^a
	B48	Bw6 ^a
	B49(21) ^a	

^a Serological specificities to be included in a screening panel.

Figure 4A

Officially Recognized HLA-DR and HLA-DQ
Specificities 1992³

DR1	DQ1
DR103	DQ2
DR2	DQ3
DR3	DQ4
DR4	DQ5(1)
DR5	DQ6(1)
DR6	DQ7(3)
DR7	DQ8(3)
DR8	
DR9	
DR10	
DR11(5)	
DR12(5)	
DR13(6)	
DR14(6)	
DR1403	
DR1404	
DR15(2)	
DR16(2)	
DR17(3)	
DR18(3)	
DR51	
DR52	
DR53	

(N) = the broad HLA-DR or HLA-DQ specificity

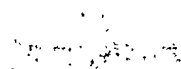


Figure 4B

Restriction Endonucleases for Genotyping of DQA1, DQB1, DRB1, DRB3,
DRB5, DPA1, and DPB1 Alleles

Allele	Antigen	Restriction endonucleases
DQA1		<i>Apa</i> LI, <i>Hph</i> II, <i>Bsa</i> II, <i>Fok</i> I, <i>Mbo</i> II, <i>Mnu</i> II
DQB1	DQw1	<i>Fok</i> I, <i>Apa</i> I, <i>Hae</i> II, <i>Sfa</i> NI, <i>Bss</i> HII, <i>Hph</i> I
	DQw2,3,4	<i>Fok</i> I, <i>Bgl</i> II, <i>Sac</i> I, <i>Acy</i> I, <i>Hpa</i> II
DRB1	DR1	<i>Ava</i> II, <i>Pst</i> I
	DR2	<i>Fok</i> I, <i>Cfr</i> 13I, <i>Hph</i> I
	DR3,5,6,8	<i>Ava</i> II, <i>Fok</i> I, <i>Kpn</i> I, <i>Hae</i> II, <i>Cfr</i> 13I, <i>Sfa</i> NI, <i>Sac</i> II, <i>Bsa</i> II, <i>Apa</i> I, <i>Hph</i> I, <i>Rsa</i> I
	DR4	<i>Sac</i> II, <i>Ava</i> II, <i>Hin</i> II, <i>Hae</i> II, <i>Hph</i> I, <i>Mnu</i> II
DRB3		<i>Hin</i> II, <i>Kpn</i> I, <i>Hph</i> I
DRB5		<i>Sfa</i> NI, <i>Cfr</i> 13I
DPA1		<i>Aha</i> I, <i>Acy</i> I, <i>Mbo</i> II
DPB1		<i>Bsp</i> 12SoI, <i>Fok</i> I, <i>Dde</i> I, <i>Bsa</i> II, <i>Bss</i> HII, <i>Cfr</i> 13I, <i>Rsa</i> I, <i>Eco</i> NI, <i>Ava</i> II

Figure 5

SSO Probes for HLA-DR Generic Typing

	Oligo seq 5' - 3'	AA	Specificity
L11	TTCAAACCTTAAGCTGCCAC	9-14	DR1
D11	CTCATACTTAICCTGCTGC	9-14	DR2
N77	TCTGCAGTAGTTGTCCACC	75-80	DR3
H33	CTCTGGTGATAGAAGTATC	29-35	DR4
E58	CCAGTACTCCTCATCAGGC	56-61	DR11
L37	AGCGCAGGACCTCCTCCTG	34-39	DR12
C11	CTTATACTTACCCTGCCAC	9-14	DR7
L74	GTGTCCACCAGGGCCCGCC	71-77	DR8 (-1403)
Y26	CTGTGCAGATACCGCACCC	23-29	DR9
F11	CTCAAACCTTAACCTCCTCC	9-14	DR10
E71	GGCCCGCTCGTCTCCAGC	68-73	DR13 (1301, 1302, 1304) DR1 (0103) DR4 (0402, 0414) DR11 (1102, 03) DR13-HAG (1303) DR14 (1401, 04, 07) DR3 DR13 (1301, 02, 04, 06) DR14 (1402, 03, 06) DR2 (DRB5*0101) DR2 (DRB5*02) DR1 (0102) DR12
K71	CGGCCCCGCTTGTCTCCAG	68-73	
F60	GTCCAGTGCTCCGCAGCA	57-62	
N37	AGCGCACGTTCTCCTCCTG	34-39	
D37	GAAGCGCAAGTCCTCCTCT	34-40	
AV86	GCTCTCCACAGCCCCGTAG	83-88	

SSO Probes for the Analysis of DRB1, DRB3, DRB5 Subtypes

	Oligo seq 5' - 3'	AA	Specificity
G13	AACTCACCCTAGAGTAC	9-14	0801-0805, 1105, 1201, 1202, 1404
H30-2	ATAGAAGTGTCTGTCCAGC	27-32	1503
N37	AGCGCACGTTCTCCTCCTC	34-39	0301, -02, 1301, 1302, 1305, 1306, 1402, 1403, 1405
S37	AGCGCACGGACTCCTCTTG	34-39	0406
S57	GCCTAGCGCCGAGTACTG	56-61	0405, 0409-0412, 0801, 0803, 0805, 1303, 1405
H60	GTCCAGTGCTCCGCAGCA	57-62	1401, 1404, 1407
F67	CTTCCAGGAAGTCCTTCTG	64-69	1601, 1101, 1103-1105, 1202, 1305
I67	CTTCCAGGATGTCTTCTG	64-69	0803, 1102, 1201, 1301-1304, 1306, 0412
I67-2	ACATCCTGGAAGACGAGC	66-71	0103, 0402, 0414, 1102, 1301, 1302, 1304
E71	GGCCCGCTCGTCTCCAGC	68-73	0103, 0402, 0414, 1102, 1103, 1301, 1302, 1304
K71	CGGCCCCGCTTGTCTCCAG	68-73	1303
QK71	CGGCCCCGCTTGTCTCCAG	68-73	0401, 0409, 0413
QR71	CCGCGGCGCCTCTGCTC	69-74	0404, 0405, 0408, 0410-0411
QR71-2	CGGCCCCGCTTGTCTCCAG	68-73	0101, 0102, 0403-0408, 0410, 0411, 1402, 1405
R71	GGCCCGCCTGTCTCCAGC	68-73	1101, 1104, 1105, 1305, 0801-0805, 1403, 0412
R71-2	CCGCGGCGCGCCTGTCTTC	69-74	1601, 1602, DRB5*01, 0102
RR71	AGCGGAGGCGGCGCGAGG	69-74	1401, 1404, 1405, 1407 (DRB5*0101)
E74	GTGTCCACCTCGGCCCCGCC	71-77	0403, 0406, 0407, 0411, 1401, 1404, 1405, 1407
L74	GTGTCCACCAGGGCCCGCC	71-77	0801-0805, 1403, 0412
V86	AACTACGGGGTTGTGGAG	82-87	Val86
G86	AACTACGGGGTTGGTGAG	82-87	Gly86
AV86	GCTCTCCACAGCCCCGTAG	83-88	0102, 1201, 1202 DRB5*02

Figure 6

Figure 7

Locus	5' Primer sequence	3' Primer sequence
D6S276	5-ccatcaaatcaccacagaaag	5-ctctcttgacagactgtcacc
D6S105	5-ggattacaggcagggagccac	5-gaaggaggaattgtatcccg
MOGCA	5-gaatgtgagaaataaaggaga	5-gataaaaggaggaaactactaca
D6S265	5-agtcacccctactgtgtctatc	5-atcgagggtaaacagcagaaaag
AMB	5-gcttcacccgatacaptagaagac	5-gcatggtgtcagagatagtcaggtc
D6S273	5-ggagaaatgtgtattcttgc	5-accnaacttcaaatlltcgg
DQCARU	5-gcactatcattaaattgtcttcacagtac	5-tgattcataaggcagaagaatccacatattggg
DQCAR	5-gaaacatataataacagagacagacaaa	5-cattctctctcttaccctcaca
G51152	5-ggtaaatctctgacttggcc	5-gacagctctctttaaacctgc
TAPICA	5-gcttggatctccccctc	5-ggacaatatttgcctccctggagg
RING3CA	5-tgcttataggggagactaccg	5-gaggtaatgtcacaggatgggg
D6S291	5-ggcatcagggcacgtgacctggc	5-ggggagatgacgaattattcactaact

Figure 8

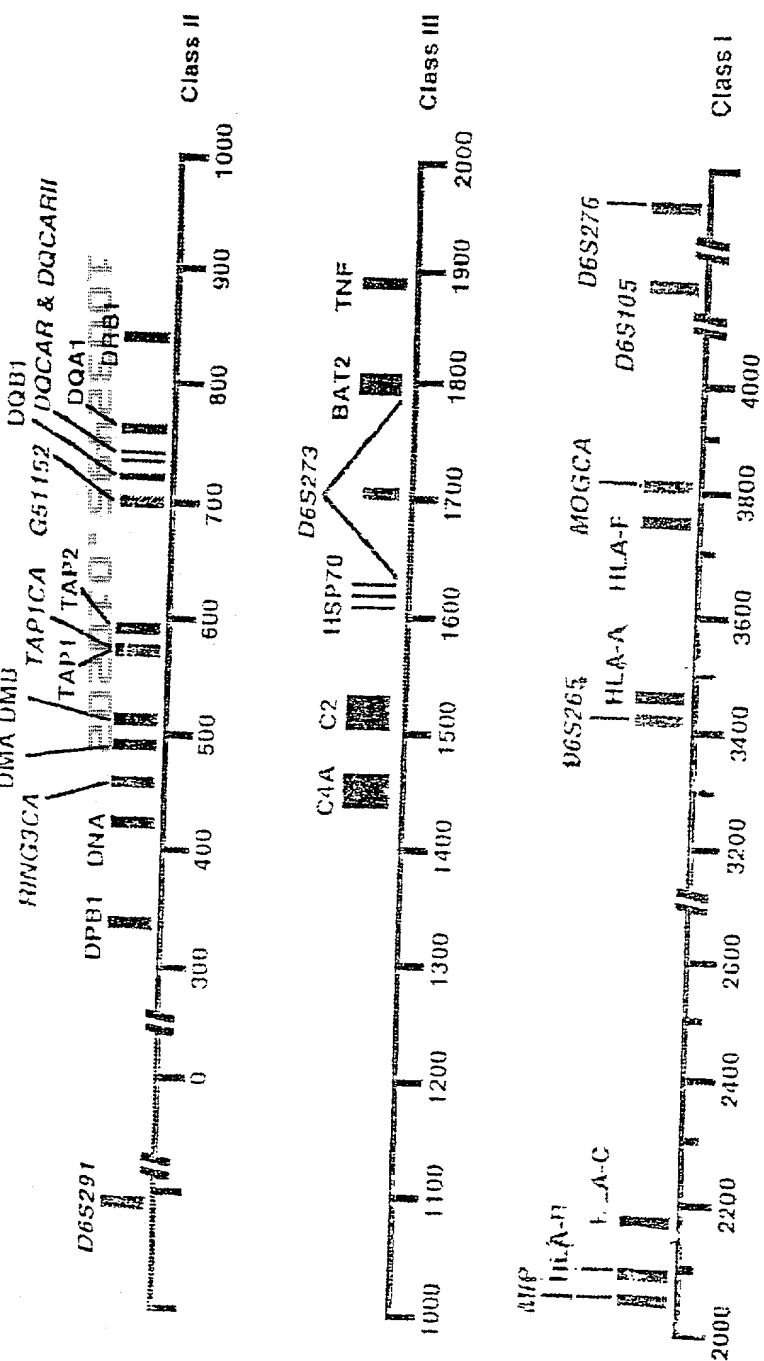


Figure 9A.



Figure 9B.

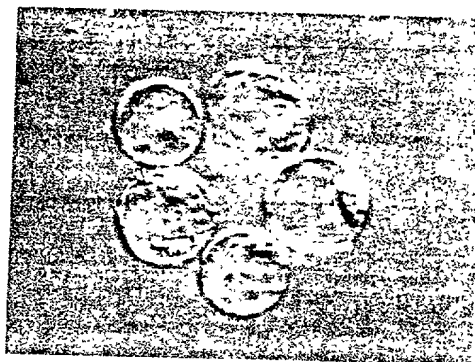


Figure 9C.



Figure 9D.



Figure 9E.

1 2 3



Figure 9F.

1 2 3



20032495 010202

Figure 10A

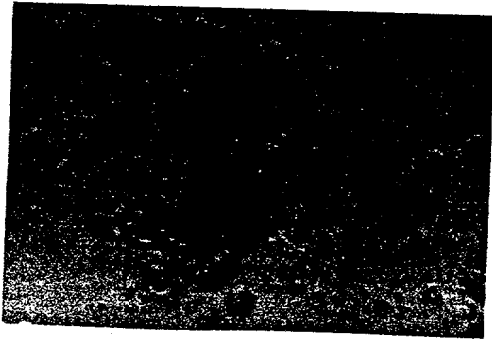


Figure 10B

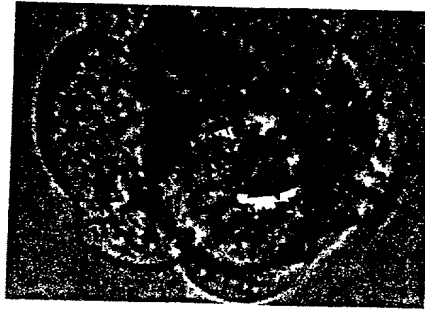


Figure 10C

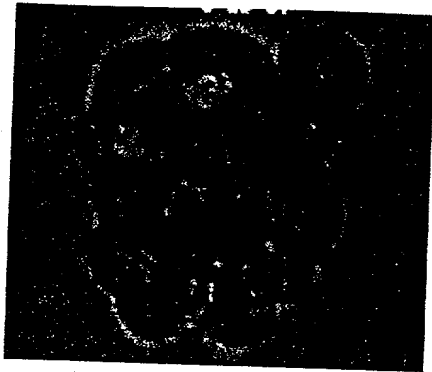


Figure 10D



202070 5642200T

PCR Primers for Amplification of the DQA1, DQB1, DRB1, DRB3, DRB5, DPA1, and DPB1 Genes

Gene	Primers	Sequences (5' to 3')	Den.	Ann.	Ext.
DQA1	5'Primer GH26	GTGCTGCAGGTGTAAACTTGTACCAG	94°C	62°C	72°C
	3'Primer GH27	CACGGATCCGGTAGCAGCGGTAGAGTTG			
DQB1	5'Primer GH28NL	GCAITGCTACTTACCAACG	94°C	55°C	72°C
	3'Primer QB202	CACCTGCAGATCCCGGTACGCCACCTC			
	5'Primer GH28NL	GCAITGCTACTTACCAACG	94°C	55°C	72°C
DRB1	3'Primer QB204	CACCTGCAGTCCGGAGCTCCAACCTGCTA			
	5'Primer 5'R2	TTCCTGTGGCAGCCTAAGAGG	94°C	60°C	72°C
	5'Primer 5'R4	GTTCTTGGAGCAGGTAAAC	94°C	60°C	72°C
	5'Primer 5'R9-1	GAAGCAGGATAAGTTTGAGTG	94°C	55°C	72°C
	5'Primer 5'R1	GGTTCCTGGAAAGATGCATCT	94°C	55°C	72°C
	5'Primer 5'R7	AGTTCCTGGAAAGACTCTTCT	94°C	60°C	72°C
	5'Primer 5'R10	GGTTCCTGGAAAGACGCGTCC	94°C	60°C	72°C
	5'Primer 5'R3568	ACGTTTCTTGAGTACTCTACG	94°C	60°C	72°C
DRB3	3'Primer 3'R (common for DRB1)	CCGCTGCACTGTGAAGCTCT			
DRB5	5'Primer DRBAMP-52	CCCAGCACGTTTCTTGAGCT	94°C	60°C	72°C
	3'Primer 3'R	CCGCTGCACTGTGAAGCTCT			
	5'Primer 5'DRB5	CTGCAGCAGGATAAGTAT	94°C	60°C	72°C
	3'Primer 3'R	CCGCTGCACTGTGAAGCTCT			
DPA1	5'Primer PL	GGAAAGCTTATCCCTGAGGTGACCG	92°C	58°C	72°C
	3'Primer PR	GGGATCCCCAGTCTTGAGGAGCCGC			
	5'Primer PLTM	GGAAAGCTTGAGGCCCAAGAGCCCAATCCA	(161 bp)		
	3'Primer PRM	GGGATCCGCCAGAACGCCAGAGACTT			
DPB1	5'Primer DPB101N	GTGAAGCTTTCCTCCGAGAGATTAT	94°C	62°C	72°C
	3'Primer D1E201	CACCTGCAGTCACTCACTCGCGCTG			

Note: Den.: Denature, Ann.: annealing, Ext.: extension.

Figure 11